

DDDDDDDDDDDDDD	EEEEEEEEEFFFFE	BBBBBBBBBBBB	UUU	UUU	GGGGGGGGGGGG
DDDDDDDDDDDDDD	EEEEEEEEEFFFFE	BBBBBBBBBBBB	UUU	UUU	GGGGGGGGGGGG
DDDDDDDDDDDDDD	EEEEEEEEEFFFFE	BBBBBBBBBBBB	UUU	UUU	GGGGGGGGGGGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDD	DDD EEE	BBB	BBB	UUU	UUU GGG
DDDDDDDDDDDD	EEEEEEEEEFFFFE	BBBBBBBBBBBB	UUUUUUUUUUUUUU	GGGGGGGGGG	
DDDDDDDDDDDD	EEEEEEEEEFFFFE	BBBBBBBBBBBB	UUUUUUUUUUUUUU	GGGGGGGGGG	
DDDDDDDDDDDD	EEEEEEEEEFFFFE	BBBBBBBBBBBB	UUUUUUUUUUUUUU	GGGGGGGGGG	

DDDDDDDDDD BBBBBBBBBB GGGGGGGGGG GGGGGGGGGG EEEEEEEEEE NN NN
DDDDDDDDDD BBBBBBBBBB GGGGGGGGGG GGGGGGGGGG EEEEEEEEEE NN NN
DD DD BBBBBBBBBB GG GG GG EE NN NN
DD DD BBBBBBBBBB GG GG GG EE NN NN
DD DD BBBBBBBBBB GG GG GG EE NNNN NN
DD DD BBBBBBBBBB GG GG GG EE NNNN NN
DD DD BBBBBBBBBB GG GG GG EEEEEEEE NN NN NN
DD DD BBBBBBBBBB GG GG GG EEEEEEEE NN NN NN
DD DD BBBBBBBBBB GG GG GG GGGGGGGG EE NN NNNN
DD DD BBBBBBBBBB GG GG GG GGGGGGGG EE NN NNNN
DD DD BBBBBBBBBB GG GG GG GGGGGGGG EE NN NN
DD DD BBBBBBBBBB GG GG GG GGGGGGGG EE NN NN
DDDDDDDDDD BBBBBBBBBB GGGGGGGG GGGGGGGG EEEEEEEEEE NN NN
DDDDDDDDDD BBBBBBBBBB GGGGGGGG GGGGGGGG EEEEEEEEEE NN NN

RRRRRRRR	EEEEEEEE	QQQQQQ
RRRRRRRR	EEEEEEEE	QQQQQQ
RR	EE	QQ
RRRRRRRR	EEEEEEEE	QQQQQQ
RRRRRRRR	EEEEEEEE	QQQQQQ
RR	EE	QQ
RRRRRRRR	EEEEEEEEEE	QQQQQQ
RRRRRRRR	EEEEEEEEEE	QQQQQQ

DBGGEN.REQ - Require file for VAX/VMS DEBUG facility.

Version: 'V04-000'

```
*****
* COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
* DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.
* ALL RIGHTS RESERVED.
*
* THIS SOFTWARE IS FURNISHED UNDER A LICENSE AND MAY BE USED AND COPIED
* ONLY IN ACCORDANCE WITH THE TERMS OF SUCH LICENSE AND WITH THE
* INCLUSION OF THE ABOVE COPYRIGHT NOTICE. THIS SOFTWARE OR ANY OTHER
* COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY
* OTHER PERSON. NO TITLE TO AND OWNERSHIP OF THE SOFTWARE IS HEREBY
* TRANSFERRED.
*
* THE INFORMATION IN THIS SOFTWARE IS SUBJECT TO CHANGE WITHOUT NOTICE
* AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT
* CORPORATION.
*
* DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS
* SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
```

```
*****
++ Modified by:
  Bruce Olsen, 30 Aug 1979
  Richard Title, 20 Aug 1981
  29-Jun-80      DLP    Added literals for PL/I, PASCAL, and C
  29-JAN-81      DLP    chs_per_lexeme is now 50
  20-AUG-81      RT     Changed step_lvl_size and added step_source
                      because of new command
                      SET STEP SOURCE
  20-JAN-82      RT     Moved CIS declarations from here to DBGLIB.
  06-MAY-82      RT     Added structures for DEFINE
--
```

MACRO

NULL_POS_SIZE	=0, 0, 0%.	Null PSE for undotted references to blocks
OPERAND_MODE	=0, 4, 4, 0%.	Mode part of an operand
OPERAND_VALUE	=0, 0, 4, 0%;	Value part of an operand

LITERAL

DBG_FAC_CODE	= 2 * 65536,	DEBUG facility code
THREAD_CODE	=1,	Conditional switch for threaded code
FATAL_BIT	=4,	Mask for fatal bit in error codes
ADD_THE_OFFSET	=1,	Add offset to value
SUB_THE_OFFSET	=0,	Subtract offset from value

| The next three literals used to be defined in SYSLIT.REF.

NO_OVERRIDE	= 0,	Use current length and radix
TTY_OUT_WIDTH	= 132,	Width of terminal line
TTY_ASCII_LEN	= 80,	Max size of character variable

| Values for register name tables

REGISTER_COUNT	=17.	Seventeen registers counting PSL
----------------	------	----------------------------------

| size parameters

MAX_ASCII LENG	= 4096,	Largest N in "ASCII:N"
MAX_STACK_PTR	=20,	Depth of the parser's parse stack.
NO_OF_INP_CHARS	=132,	Max number of characters in input line ***Must be divisible by 4***
CHS_PER_LEXEME	=50,	Max number of characters in a single lexeme ***Must be divisible by 4***
NO_OF_TOKENS	=30,	Max number of tokens permitted ***Must be an even number***
MAX_BYTE_INT	= 127,	Largest byte integer
ALL_BPTS	=-1,	All breakpoints in chain
BPT_INSTRUCTION	=%X'03',	Opcode assignment for bpt instruction (srm revision 3)
BREAK_POINT	= 1,	Table entry is breakpoint
TRACE_POINT	= 2,	Table entry is tracepoint
WATCH_POINT	= 3,	Table entry is watchpoint
WRITE_WATCH	= 1,	Watchpoint is for write access
READ_WRT WATCH	= 2,	Watchpoint is for read/write access
EXECUTE_WATCH	= 3,	This is break or trace point
NUM_MAX_LENGTH	=11,	Maximum number of characters per numeric string
SYM_MAX_LENGTH	=31,	Maximum number of characters per symbol
UPPER_CASE_DIF	='A' - 'A',	Difference between ASCII representation of upper and lower case
ASCII_OFFSET	=%0'60',	Offset from numeric value to ASCII value

| ASCII character representations

LINEFEED	=%0'12',	ASCII representation of linefeed
----------	----------	----------------------------------

CARRIAGE_RET	=%0'15',	! ASCII representation of carriage return
ASC_AT_SIGN	=%ASCII 'a',	! ASCII representation of an at sign
ASC_CLOS_PAREN	=%ASCII ')',	! ASCII representation of closed parenthesis
ASC_COMMÄ	=%ASCII ',',	! ASCII representation of a comma
ASC_DOUB_QUOTE	=%ASCII '\"',	! ASCII representation of a double quote
ASC_MINUS	=%ASCII '-',	! ASCII representation of a minus sign
ASC_OPEN_PAREN	=%ASCII '(',	! ASCII representation of open parenthesis
ASC_PERCENT	=%ASCII '%',	! ASCII representation of a percent sign
ASC_PERIOD	=%ASCII '.',	! ASCII representation of a period
ASC_PLUS	=%ASCII '+',	! ASCII representation of a plus sign
ASC_POUNDS	=%ASCII '#',	! ASCII representation of a pounds sign
ASC_QUOTE	=%ASCII '\"',	! ASCII representation of a quote character
ASC_SPACE	=%ASCII ' ',	! ASCII representation of a space
ASC_SQ_CLO_BRAK	=%ASCII ']',	! ASCII representation of a closed square bracket
ASC_SQ_OPN_BRAK	=%ASCII '[',	! ASCII representation of an open square bracket
ASC_TAB	= 9,	! ASCII representation of a tab
ASC_UP_ARROW	=%ASCII '^',	! ASCII representation of an up arrow

! The 'mode' data structure is really just
! a byte vector with the following characteristics.

MODE_LVL_SIZE	=10,	! Number of bytes in each level.
MODE_LEVELS	=4,	! Number of levels for mode settings

! Each level of the mode data strucutre has the following entries:

MODE_RADIX	=0,	! Radix - dec, hex, oct, etc.
MODE_LENGTH	=1,	Length - long, word, byte, etc.
MODE_SYMBOLS	=2,	Boolean -> whether we know values as "extern + offset" or not.
MODE_INSTRUC	=3,	Boolean -> whether we input/output values as machine instruction.
MODE_ASCII	=4,	Boolean -> whether we output (only!) values as ASCII strings or not.
MODE_SCOPE	=5,	Whether or not there is a CSP, (and whether we should apply it)
MODE_GLOBALS	=6,	Whether or not we should apply global scope first in the search rules.
MODE_FORTRAN	=7,	!LINE, %LABEL
MODE_IMMEDIATE	=8,	FORTRAN address or contents of mode
MODE_G_FLOATS	= 9,	Set the mode to G_FLOAT, so we can pick up the constant as G_FLOAT constant

! The four levels have the following names and indices.

DEFAULT_MODE	=0,	! Default system initialized mode
USER_DEF_MODE	=1,	! User-set default mode
OVERRIDE_MODE	=2,	! One-line override mode
LOCAL_MODE	=3,	! Local mode

! The mode_length field should be one of the following.

BYTE_LENGTH	=1,	! Byte length
-------------	-----	---------------

WORD_LENGTH =2, ! Word length
LONG_LENGTH =4, ! Longword length

! And the mode_radix field should be one of:

DECIMAL_RADIX =10, ! Decimal radix
HEX_RADIX =16, ! Hexadecimal radix
OCTAL_RADIX =8, ! Octal radix
BINARY_RADIX =2, ! Binary radix

! The FORTRAN mode fields are as follows:

LABEL_MODE =1, ! Numbers are label numbers
LINE_MODE =2, ! Numbers are line numbers
LITERAL_MODE =3, ! Numbers are literal values

! The 'STEP' data structure is really just a byte vector with the
! following characteristics. It is isomorphic to the 'mode' structure.

STEP_LVL_SIZE =4, ! Number of bytes in each level.
STEP_LEVELS =3, ! Number of levels for step settings

! Each level of the step data structure has the following entries:

STEP_LINE =0, ! LINE or INSTRUCTION (a boolean)
STEP_NOSYSTEM =1, ! [NO]SYSTEM steps (a boolean)
STEP_OVER =2, ! INTO or OVER (a boolean)
STEP_SOURCE =3, ! SOURCE or NOSOURCE

! The three levels have the following names and indices.

DEFAULT_STEP =0, ! Default system initialized step
USER_DEF_STEP =1, ! User-set default step type
OVERRIDE_STEP =2, ! One-line override step type

! The data structure which holds the settings for SET SEARCH is
! a byte vector with the following characteristics (it works the
! same as the STEP data structure above)

SEARCH_LVL_SIZE = 2,
SEARCH_LEVELS = 3,

! Each level of the data structure has the following entries

SEARCH_ALL = 0,
SEARCH_IDENT = 1,

! The three levels have the following names and indices

DEFAULT_SEARCH = 0,
USER_DEF_SEARCH = 1,

OVERRIDE_SEARCH = 2,

! The data structure which holds the settings for SET DEFINE is
! a byte vector with the following characteristics (it works the
! same as the STEP data structure above)

DEFINE_LVL_SIZE = 1,
DEFINE_LEVELS = 3,

! Each level of the data structure has only one entry

DEFINE_ONLY = 0,

! The three levels have the following names and indices

DEFAULT_DEFINE = 0,
USER_DEF_DEFINE = 1,
OVERRIDE_DEFINE = 2,

! The output configuration data structure is comparable to the STEP or
! MODE data structures except that it has only one level. It is used
! to store information pertaining to DEBUG's output setting.

OUTPUT_SIZE = 3. ! Number of bytes in the data structure

! The following entries are contained in the output config vector:

OUT_LOG	= 0,	! LOG or NOLOG
OUT_TERM	= 1,	! TERMINAL or NOTERMINAL
OUT_VERIFY	= 2,	! VERIFY or NOVERIFY
OUT_SCREEN	= 3,	! SCREEN_LOG or MOSCREEN_LOG

! Used to identify the flavor of type between dbg\$show_type and its
! callers.

DEFAULT = 0,
OVERRIDE = 1,

! Bit configurations for context flags.

CONTEXT_BITS = 32, ! Number of context bits

! Position of opcode byte at a breakpoint

OPCODE_BYTE = 0, ! Opcode offset

! Location types for end range arguments

```

! MEMORY_LOC      =0,          ! Memory location

! Names of exception types for traceback.

NOT_AN_EXC      =0,          ! Line number searching for pc
TRAP_EXC        =1,          ! PC of trap searching for line number
FAULT_EXC       =2,          ! PC of fault searching for line number
LOOKUP_EXC      =3;          ! Like TRAP only don't do VAL_TO_SYM
                            again.

! Literals to define the various address spaces in the VAX architecture.

LITERAL
SYSTEM_SPACE    = XX'80000000',
P1_SPACE        = XX'40000000';

LITERAL
! Language names

LANG_MACRO      = 0,
LANG_FORTRAN    = 1,
LANG_BLISS       = 2,
LANG_COBOL      = 3,          ! COBOL
LANG_BASIC       = 4,          ! BASIC+2
LANG_PLI         = 5,          ! PL/I
LANG_PASCAL      = 6,          ! Pascal
LANG_C           = 7,          ! C
MAX_LANGUAGE     = 6;          ! Languages 0 - 6 (C not supported yet)

! The semantic stack is a BLOCKVECTOR for which the following fields
! are defined...

FIELD STACK_FIELDS =
SET
STKSV_BASE      = [0,0,0,0],    ! Base of block.
STKSV_VAL1      = [0,0,32,0],   ! First value field
STKSV_VAL2      = [1,0,32,0],   ! Second value field
STKSV_NT_PTR    = [2,0,32,0],   ! Pointer to name table entry
STKSV_INDEX     = [3,0,16,0],   ! Index field
STKSV_OFFSET    = [3,16,16,0],  ! Offset field
STKSV_POS        = [4,0,16,0],   ! Position field
STKSV_TYPE       = [4,16,8,0],   ! Token type field
STKSV_SIZE       = [4,24,8,0],   ! Size field
STKSV_EXT        = [5,0,1,0],    ! Sign extension bit
STKSV_REF        = [5,1,1,0],    ! Is token a REF bit
STKSV_IMMED      = [5,2,1,0],    ! Immediate mode bit
STKSV_ARGS       = [5,3,1,0],    ! Access actuals supplied bit
STKSV_FLDRF      = [5,4,2,0],    ! <field_ref> supplied flag
STKSV_DOT        = [5,6,1,0],    ! Indirection flag
STKSV_STRUC      = [5,8,4,0],    ! Kind of BLISS structure
TES;

```

LITERAL

```
STACK_ENTRY_SIZ = 6.          ! No of longwords in a semantic_stack BLOCK
NO_STRUC        = 0.          ! BLISS structure types
VECTR           = 1.
BITVEC          = 2.
BLOK            = 3.
BLOCKVEC        = 4;
```

MACRO

```
SEMANTIC_STACK = BLOCKVECTOR[20, STACK_ENTRY_SIZ] FIELD(STACK_FIELDS)%;
```

```
! General purpose structure for manipulation of singly linked lists. Each cell
! contains two long-word fields. The first is a pointer to the next list link
! cell; the second is a pointer to the current element in the list.
```

LITERAL

```
LIST_LINK_SIZE = 8;          ! Bytes in a list link cell
```

FIELD LIST_LINK_FLDS =

```
SET
NEXT_ONE_PTR    = [0,0,32,0]. ! Pointer to the next link cell
THIS_ONE_PTR    = [4,0,32,0] ! Pointer to the current object in the list
TES;
```

MACRO

```
LIST_LINK = BLOCK[LIST_LINK_SIZE, BYTE] FIELD(LIST_LINK_FLDS)%;
```

```
! End of DBGGEN.REQ
```

0075 AH-BT13A-SE
VAX/VMS V4.0

DIGITAL EQUIPMENT CORPORATION
CONFIDENTIAL AND PROPRIETARY

